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## Art in the Digital Age

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Nothing since the invention of photography has had a greater impact on artistic practice than the emergence of digital technology. While photography revolutionized the arts by superseding painting's claim to represent the "real," digital technology has become the ultimate tool for capturing the nuances of the "unreal." In digital media, all information is reduced to binary code, a series of zeros and ones, creating a dynamic arena in which images and objects can be melded, morphed, or made to disappear. Artists have taken advantage of their unprecedented control over sensation and information to produce works that challenge our everyday perceptions of color, form, sound, space, and time. Imbued with unsettling emotional and psychological states, these works also reflect the pervasive sense of irreality that has come to suffuse our everyday lives in this dawning digital age.

The recent explosion of artistic uses of digital media is due, in part, to improvements in the technology and to dramatically declining costs. Twenty years ago, computers offered a palette of 64 colors; ten years ago, the number had risen to 256. Today, a computer can produce a hyperrealistic 16 million colors, while screen resolution, measured in the count of pixels, has more than doubled. Low-cost digital video and editing equipment, as well as easy-to-use animation programs such as Flash, have enabled an increasing number of artists to produce highly refined moving images. The new technique of rapid prototyping has allowed sculptors to harness the computer's ability to model three-dimensional forms. The Internet, meanwhile, has opened up an entirely new arena for artistic endeavor—the creation of interactive works accessible to anyone with a computer and a modem.

Perhaps the effect most commonly associated with digital technology and the arts is "virtual reality." While its most extreme form—complete alternative realities replete with all five senses—still remains the stuff of fantasy, digital media have made possible the creation of simulated environments of remarkable veracity. Such environments can be constructed with effects of texture, lighting, and form so realistic that the resulting two-dimensional image appears to be photographic. With moving images, virtual reality can be accomplished with even less attention to representational detail since the images are not fixed: through computer-generated kinesthetic sensations, viewers feel themselves in transit within a three-dimensional space.



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Widely available computer software such as Photoshop allows for an unprecedented ease in manipulating images and forms. After scanning original or found images, artists are able to transform them through a wide array of tools and effects. The manipulation of pre-existing imagery and the creation of special effects began long before the development of digital technology. What is different today is that unaltered images may soon become the exception rather than the rule. Frequent exposure to altered images has profoundly affected our belief in the veracity of photography, and indeed to information of all kinds. Contemporary artists' work reflects this unstable representational terrain, offering images that abound in glaring gaps, sudden shifts, and imperceptible transformations.

Digital technology also offers extraordinary new ways of juxtaposing disparate materials. The computer's reduction of all information-text, imagery, and sound-to series of ones and zeros establishes a common medium in which to manipulate formerly diverse phenomena. Composite computer images show no trace of the seams that once separated elements in collage, montage, and assemblage. These manipulations are not limited to two dimensions. The technique of rapid prototyping, in which three-dimensional computer models are "printed out" as solid, physical forms, has enabled the creation of sculptures that seem to have sprung directly from the artist's mind.

Animated imagery has become increasingly versatile and complex as light, color, form, and speed can be digitally manipulated down to the level of the pixel. The control of these elements presents compelling possibilities for the development of the kind of pictorial abstraction set in motion by painters in the twentieth century. Digital technology is also being used to create complex, layered approaches to narrative that explore new ways of capturing the experiences of time, place, and identity. While some artists employ solely digital tools, such as Flash or related animation programs, others create hybrid forms that exploit the intersection of digital technology with analog film, video, photography, and installation.

Interactivity, like animation, is not new to digital media. The Internet, however, has opened an unimaginably large and complex arena for interactive artistic practice. Approaches to art on the Internet vary widely, from works that are experienced by a single user to those that engage an unlimited number of people in an accumulative, interactive process. Artists, moreover, are challenging the limitations of the Web browser interface by combining the Internet's unique access to real-time information and multiple-user interactivity within a larger, sometimes site-specific, multimedia environment.

It is becoming increasingly difficult to categorize such radically innovative works with the available media terminology, i.e., video, sculpture, or photography. Even the simplest



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digitally produced work presents a challenge to conventional definitions and terms. This is due in part to the interchangeability of digital information: for example, a single CAD file—which consists at its most basic level of a string of zeros and ones—can be translated into two-dimensional images, three-dimensional forms, or even sound. Once clearly distinct disciplines such as video and printmaking, or drawing and sculpture, now share fundamental properties insofar as they depend on the same software or even the same information.

Digital technology's impact on the arts echoes the revolution it has spurred in society at large: our experiences of communicating, working, and playing have been irrevocably transformed. While it has improved life in many ways, this revolution has also brought deep insecurities concerning privacy and identity. Digital technologies are contributing to a sense that the boundaries between the organic and inorganic, the known and the unknown, the real and the unreal, are being blurred beyond recognition. The unique properties of digital media imbue our daily lives with a number of challenging, often contradictory, experiences. We can be constantly connected to others—through email, cell phones, and so forth—yet feel profoundly more alienated. As the means of contact multiply, so too do the possibilities for communication breakdown. Like-wise, when we have access to unlimited information, that information can become, in its very infiniteness, indistinguishable from noise. This sense of a fantastic surfeit of information can transform instantaneously into a suspicion that digital technologies are limiting our access to objective reality. The pervasiveness of digital media in our society has led to an internalization of these complex effects, influencing the ways we perceive, think, and feel. "BitStreams" explores this internalization, treating the digital age not as something residing solely in a kind of techno-style, but rather as a constellation of technical, formal, emotional, and cognitive phenomena that are redefining how art is conceptualized and created, while simultaneously transforming important aspects of the human experience.